federal register

Tuesday
November 27, 1979

Part VI

Environmental Protection Agency

Standards of Performance for New Stationary Sources: Incinerators; Review of Standards

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

[FRL 1310-2]

Standards of Performance for New Stationary Sources: Incinerators; Review of Standards

AGENCY: Environmental Protection Agency (EPA).

ACTION: Review of standards.

SUMMARY: EPA has reviewed its standard of performance for municipal incinerators (40 CFR 60.50, Subpart E). The review is required under the Clean Air Act, as amended August 1977. The purpose of this notice is to announce EPA's intent to investigate the establishment of a revised standard which would be consistent with the performance capabilities of demonstrated best available control technology and which would include a limitation on the opacity of emissions.

DATES: Comments must be received by January 28, 1980.

ADDRESS: Send comments to: Central Docket Section (A-130), U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, Attention: Docket A-79-18. Comments should be submitted in duplicate if possible.

FOR FURTHER INFORMATION CONTACT: Mr. Robert Ajax, Telephone: (919) 541-5271. The document "A Review of Standards of Performance for New Stationary Sources—Incinerators" (EPA-450/3-79-009) is available upon request from Mr. Robert Ajax (MD-13), Emission Standards and Engineering Division, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

SUPPLEMENTARY INFORMATION:

Background

New Source Performance Standards (NSPS) for incinerators were promulgated by the Environmental Protection Agency on December 23, 1971 (40 CFR 60.50, Subpart E). These standards regulate the emission of particulate matter to the atmosphere from municipal solid waste incinerators having charging rates greater than 45 Mg (50 tons) per day. These regulations apply to any affected facility which commenced construction or modification after August 17, 1971.

The Clean Air Act Amendments of 1977 require that the Administrator of the EPA review and, if appropriate, revise established standards of performance for new stationary sources at least every 4 years [Section 111(b)(1)(B)]. Following adoption of the Amendments, EPA contracted with the MITRE Corporation to undertake a review of the municipal incinerator industry and the current standard. The MITRE review was completed in March 1979. This notice announces EPA's decision regarding the need for revision of the standard. Comments on the results of this review and on EPA's decision are invited.

Findings

Industry Status: In 1972 there were 193 incinerator plants operating in the U.S. By 1977 this number had decreased to 103 plants which include a total of 252 furnaces and a total solid waste disposal capacity of about 36,000 Mg/day (40,000 tons/day). The estimated national particulate emissions from municipal incineration in 1975 were between 60,000 and 100,000 tons or between 0.4 and 0.6 percent of all particulate emissions in the U.S.

Since 1971 five new incinerator facilities involving a total of eight new furnaces with a combined capacity of 2,700 Mg/day (2,970 tons/day) have become operational. In 1978, 17 cities were identified where new incinerators are planned or under construction. Both existing units and the units which are planned or under construction are concentrated primarily in the Northeast and Midwest.

Coincineration: A factor having an increasingly important impact on the use of incineration as a waste disposal process is the increasing cost of energy and the relatively new concept of resource recovery not only for recycling of material but also for utilization of the energy content of solid waste as a processed fuel source. A recent survey indicates that there are at least 28 resource recovery systems in operation, under construction, or in the final contract stage. Total capacity of these operations will be about 27,000 Mg/day (30,000 tons/day), or about three-fourths of the current installed incinerator capacity. For the most part, these systems are characterized by substantial processing of solid waste into usable recycled material and a homogenous fuel.

The processing of solid waste prior to combustion is a growing trend that has implications in the definition of incineration and the applicability of the standard. Refuse derived fuel (RDF) may be used in an industrial or utility boiler which may or may not be located at the new solid waste processing center. Similarly, RDF may be used to provide fuel for incinerating sewage sludge in a fluidized bed reactor. Such coincineration of municipal solid waste and sewage sludge has been practiced in Europe for several years and on a limited scale in the U.S. Where energy resources are scarce and land disposal is economically or technically unfeasible, the recovery of the heat content of dewatered sludge as an energy source will become more desirable. Due to the institutional commonality of these wastes and advances in the preincineration processing of municipal refuse to a waste fuel, many communities may find joint incineration in energy recovery incinerators an economically attractive alternative to their waste disposal problems.

Coincineration of municipal solid waste and sewage sludge as described above is not explicitly covered in 40 CFR 60. The particulate standard for municipal solid waste described in Subpart E (0.18 grams/dscm or 0.08 grains/dscf at 12 percent CO_2) applies to the incineration of municipal solid waste in furnaces with a capacity of at least 45 Mg/day (50 tons/day). Subpart 0, the particulate standard for sewage sludge incineration (0.65 grams/kg dry sludge input or 1.3 lb/ton dry sludge), applies to any incinerator that burns sewage sludge with the exception of small communities practicing coincineration. When coincineration is practiced, determination of the applicability of the two standards is made by EPA's Office of Enforcement according to policies which are described in the information document identified at the beginning of this notice. Such determinations are not straight forward, however, due to the differing form of the two standards and the relative stringency which, in terms of particulate matter concentration or grain loading, differs by a factor of more than two.

Particulate Matter Emissions and Control Technology

Control systems on municipal incinerators have evolved from the use of simple settling chambers which remove large particles, to the use of electrostatic precipitators (ESPs) that remove up to 99 percent of all particulate matter. Many of the incinerators constructed prior to 1971 utilized mechanical cyclone collectors with removal efficiencies in the range of 60 to 80 percent. Various scrubber techniques including the submerged entry of gases, the spray wetted-wall cyclone, and the venturi scrubber were also employed. High efficiency electrostatic precipitators were utilized in a limited number of cases.

Since the adoption in 1971 of the new source performance standard, the control device which has been most widely used and which has been most

effective is the electrostatic precipitator. A limited number of venturi scrubbers and, in one case, a fabric filter have also been employed.

In this review of the standard, a total of 19 emission tests were identified which had been performed on 14 incinerators. The control equipment on these incinerators was designed to comply with the Federal new source performance standard for particulate matter or State or local standards which are as stringent or more stringent than the NSPS. The emission tests in each case were performed with EPA Method 5. A summary of the test results is provided in Table 1.

Table 1.—*Municipal Incinerator Test Results*

State	City/name	(Tons/day)	Control	Test results	
				(Gr/dscf at 12 pct CO_2)	Year
Massachusetts	E. Bridgewater	150	F.F.	0.024	1975
Massachusetts	Saugus	600	ESP	0.049	1976
Tennessee	Nashville	360	ESP	0.018	1976
Virginia	Norfolk (Navy)	280	ESP	0.05	1976
Utah	Ogden-3	150	ESP	0.045	1974
District of Columbia	Washington	200	ESP	0.040/0.06	1973
Illinois	Chicago NW	400	ESP	0.030/0.050	1971/75
Maryland	Baltimore No. 4	300	ESP	0.025	1976
Pennsylvania	EC Philadelphia	300	ESP	0.047	1977
Pennsylvania	NW Philadelphia	300	ESP	0.048	1976
Illinois	Calumet	200	VS (15)	0.046/0.049	1974
Kentucky	Louisville	200	VS (15-18)	0.05/0.06	1976
				0.11	1977
Wisconsin	Sheboygan Falls	30-90	S (7-8)	0.416	1976
Rhode Island	Pawtucket	200	VS (35-40)	0.0775	1978

The results shown in Table 1 indicate that ESP control technology is capable of limiting emissions to the values well below the 0.18 g/dscm (0.08 gr/dscf) level at 12 percent CO_2. Specifically, the results from 11 tests performed at 9 facilities employing electrostatic precipitators showed results ranging from .041 to 0.14 g.dscm (0.018 to 0.06 gr/dscf) at 12 percent CO_2; 10 of the 11 were below 0.114 g/dscm (0.05 gr/dscf). The Baltimore Number 4 incinerator emission control system meets the strict Maryland standard for incinerators of 0.07 g/dscm (0.03 gr/dscf) at 12 percent CO_2. Similarly, the Saugus, Massachusetts, facility was designed for the State standard of 0.11 g/dscm (0.05 gr/dscf) at 12 percent CO_2 and was successfully tested at this level of compliance.

The use of scrubbers on municipal incinerators has met with mixed results and an overall difficulty in complying with the particulate emission standard. Although the data obtained from five tests at three venturi scrubber-controlled sources ranged from 0.015 to 0.166 g/dscm (0.046 to 0.0775 gr/dscf), the scrubber performance results, which are discussed in more detail in the information document, indicate that venturi scrubbers for control of municipal waste particulate emissions may involve considerable risk of nonattainment of the current NSPS. The Pawtucket facility venturi scrubber, for example, operates at pressure drops higher than the original design to barely meet the standard of 0.18 g/dscm (0.08 gr/dscf) at 12 percent CO_2.

The Sheboygan Falls, Wisconsin, incinerator utilizes a spray chamber with baffles. Although reportedly designed to meet a 0.08 gr/dscf standard, this type of control technology would not normally be expected to exhibit the control efficiency necessary to obtain the standard.

Since 1971, only the East Bridgewater, Massachusetts, facility has been tested with a fabric filter control device. In 1975, that facility tested at 0.054 g/dscm (0.024 gr/dscf) at 12 percent CO_2, well below the Massachusetts standard of 0.11 g/dscm (0.05 gr/dscf) at 12 percent CO_2. However, problems of bag and baghouse corrosion and periodic high opacity observations have persisted.

Currently, Framingham, Massachusetts, is the only other municipal incinerator facility with a fabric filter control system. The specially coated bags are designed to prevent deterioration and to achieve 0.07 g/dscm (0.03 gr/dscf) at 12 percent CO_2.

Gaseous and Trace Metal Emissions

Gaseous and trace metal emissions are not specifically controlled under the present NSPS although the incinerator and the particulate matter control equipment do limit such emissions. Among possible gaseous emissions, the potential for high levels of hydrochloric acid (HCL) from the increased incineration of polyvinyl chlorides has received particular attention. Similarly, lead and cadmium have been subject to several studies. Cadmium emissions are reported to represent approximately 0.2 percent of all particulate emissions and about 0.4 percent of emissions less than 2 microns. Lead concentrations are reported to represent about 4 percent of all particulate matter and 11 percent of respirable particulates emitted from the scrubber. Emission factors are 9×10^{-1} kg/Mg (18×10^{-1} lb/ton) refuse for cadmium and 1.9×10^{-1} kg/Mg (3.8×10^{-1} lb/ton) refuse for lead.

In this review of the current NSPS no new findings were identified which indicate the need for a specific, nationally applicable limitation on the gaseous or trace metal emissions. There is, however, currently a program underway within EPA to independently look at the need to regulate cadmium from incinerators and other sources. Separate documents have been prepared which examine emissions, resulting atmospheric concentrations, and population exposure. These documents are part of an overall EPA program to satisfy requirements of the 1977 Clean Air Act to evaluate the need to regulate emissions of cadmium to the air.

Opacity

The current NSPS does not contain a standard for opacity because testing of a limited number of incinerators prior to promulgation of the standard in 1971 did not indicate a consistent relationship between emission opacity and particulate mass concentrations. However, a survey of current State regulations shows that every State has an opacity standard for new incinerators of 20 percent or stricter except Illinois (30 percent), Indiana (40 percent), and Delaware (no standard). Maryland has a "no visible emissions" standard and the District of Columbia has a new source ban on the incineration of municipal waste. However, data were not found in this review of the NSPS to determine whether sources are consistently in compliance with these limits.

Conclusions

Based upon a review of the current NSPS and other available information as summarized above, EPA concludes that there is a need to undertake a program to revise the standard. This program, which is expected to begin in FY 1980, will be directed toward:

(1) Investigation of a more restrictive particulate matter limitation consistent with the capabilities of the best available technology. This is based upon the available data which indicate that the capability of electrostatic precipitators applied to incinerators has improved measurably since the standard was developed in 1971. This investigation will include analysis of the costs associated with a more restrictive standard.

(2) Establishment of an opacity standard. Such a standard is considered important by EPA as a means for assessing proper operation and maintenance of particulate matter control equipment and is included in most of the Agency's particulate matter NSPS. Although a relationship between particulate mass and opacity was not established when the standard was adopted in 1971, the additional number of well controlled plants which are now in operation and the widespread existence of State opacity limits are expected to provide a basis for estalishment of an opacity standard. Consistent with EPA policy, such a standard would not be more restrictive than the particulate mass standard.

(3) Establishment of a consistent basis for the limitation of particulate emissions from differing combustion devices independent of the fuel or waste material being fired. While a single standard is probably not possible, there is a need to investigate the possibility of expressing standards for sludge incinerators, and municipal incinerators on a common basis, and of making the standards more uniform. To do so, EPA plans to closely coordinate the development of the industrial and waste-fired boiler standards which are now underway, and the planned revision of the sewage sludge incinerator standard and the municipal incinerator standard.

(4) In addition, if the need to reduce cadmium emissions is indicated as a result of the EPA program noted above, appropriate action will be taken to limit cadmium emissions.

Public Participation

All interested persons are invited to comment on this review, the conclusions and EPA's planned action.

Dated: November 16, 1979.

Barbara Blum,

Acting Administrator.

[FR Doc. 79-36474 Filed 11-26-79; 8:45 am]

BILLING CODE 6560-01-M